

What is Claimed is:

1. A controlled descent device comprising:  
a housing;  
a rotatable drum supported within said housing;  
5 a line wound around said drum adapted for extraction and retraction from said housing;  
a brake mechanism for engaging said drum to produce a resisting force during line extraction; and  
10 a manufactured mechanism linking said brake mechanism to said drum for producing a rotational motion in one direction and fixed motion in the opposite direction.

2. The controlled descent device of claim 1 wherein said manufactured mechanism is a one-way bearing.

3. The controlled descent device of claim 2 wherein said one-way bearing is selected from the group consisting of back stopping, clutch, indexing, roller, sprag and sprag combinations.

4. The controlled descent device of claim 2 wherein said brake mechanism includes a pinion gear with a shaft supported on said housing, and a brake hub supported on said shaft by said one-way bearing.

5. The controlled descent device of claim 1 wherein the line is constructed of flat webbing.

6. The controlled descent device of claim 5 wherein said flat webbing is composed of a material having minimum 20% elongation at break.

7. The controlled descent device of claim 5 wherein said drum has side walls spaced slightly wider than the webbing width, whereby said line is adapted to be wound on said drum in consecutive layers.

8. The controlled descent device of claim 7 further including a nozzle supported by said housing through which said line is extracted, said nozzle including an opening slightly larger than the webbing width, whereby said line is directed onto said drum in consecutive layers.

9. The controlled descent device of claim 8 further including a cylindrically shaped roller supported by said housing for directing said line onto and off of said drum.

10. The controlled descent device of claim 5 wherein said line further comprises an internal permanent portion and a distal replaceable portion, said permanent portion and said replaceable portion having ends joined by a linkage, whereby said replaceable portion is adapted to be replaced when worn.

11. The controlled descent device of claim 10 wherein each of said joined ends has a loop wherein said linkage comprises a cylinder supported within each loop, and a bolt passing through holes formed in each loop and through each cylinder.

12. The controlled descent device of claim 10 wherein each of said joined ends has a loop, wherein said

linkage comprises a screw lock link passing through the loops.

5 *Bl* 13. The controlled descent device of claim 10 wherein each of said joined ends has a loop, wherein said linkage comprises a plate supported within each said loop, and at least one screw passing through the loops and plates.

10 *Bl* 14. In a controlled descent device including a housing, a rotatable drum supported within said housing, a line wound around said drum adapted for extraction and retraction from said housing, a brake mechanism for engaging said drum to produce a resisting force during line extraction; wherein the improvement comprises a manufactured mechanism linking said brake mechanism to said drum for producing a rotational motion in one direction and fixed motion in the opposite direction.

15 *Bl* 15. The controlled descent device of claim 14 wherein said manufactured mechanism is a one-way bearing.

20 *Bl* 16. *sub a2* The controlled descent device of claim 15 wherein said one-way bearing is selected from the *group* consisting of back stopping, <sup>a</sup> clutch, indexing, roller ramp type, sprag and sprag *clutch/roller* bearing combinations.

25 *Bl* 17. A controlled descent device comprising:

a housing;

a rotatable drum supported within said housing;

a line wound around said drum adapted for extraction and retraction from said housing;

5       wherein said line further comprises an internal permanent portion and a distal replaceable portion, said permanent portion and said replaceable portion having ends joined by a linkage, whereby said replaceable portion is adapted to be replaced when worn.

10       18. *put ab* The controlled descent device of claim 27 wherein each of said joined ends has a loop wherein said linkage comprises a cylinder supported within each loop, and a bolt passing through holes formed in each loop and through each cylinder.

15       19. The controlled descent device of claim 27 wherein each of said joined ends has a loop, wherein said linkage comprises a screw lock link passing through the loops.

20       20. The controlled descent device of claim 27 wherein each of said joined ends has a loop, wherein said linkage comprises a plate supported within each said loop, and at least one screw passing through the loops and plates.

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